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ABSTRACT

Nineteen variables measuring environmental process, environmental press, and child rearing practices and attitudes were used to perform a cluster analysis of families with trainable mentally retarded (TMR) children. Five different family types were identified: (1) cohesive, harmonious; (2) control-oriented, somewhat unharmonious; (3) low-disclosure, unharmonious; (4) child-oriented, expressive; and (5) disadvantaged with low morale. Three of these types resembled family types obtained in a cluster analysis of families of the educable mentally retarded or educationally handicapped. A canonical analysis of the 19 variables revealed that the most important dimension differentiating the clusters was one labeled "provision of an enriched environment for child development." Followup case studies of families of two types: cohesive, harmonious; and disadvantaged, low morale, are provided. Two tables showing the 19 variables and the family topologies, and 9 cluster analysis figures, conclude the report. (CL)

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Salient Variables in Research with Mentally Retarded Children

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Paper presented at the Gatlinburg Conference of Research in Mental Retardation/Developmental Disabilities, March 1983

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Salient Variables in Research with Families of Mentally Retarded Children

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Investigation of families with mentally retarded children has reached the point where basic factors of the psychosocial environment can be delineated and put into a structural description. This set of descriptor variables can then be employed for further analyses, such as the study of causal attribution in parent-child interaction and the determination of an objective typology of families.

Our own studies of families with TMR and EMR-EH children, have utiilized these variables in cluster analyses. We obtained a taxonomy of five family types in the TMR group and a taxonomy of seven types in the EMR-EH group. Comparison of the profiles of the two taxonomies reveal three types in each that are essentially the same: (1) Cohesive, harmonious families, (2) Low-disclosure, unharmonious families, and (3) Learning-oriented, somewhat discordant families. Stepwise discriminant analyses reduced the number of psychosocial environment variables necessary to adequately classify families in the typologies. Membership in a family type was validated by further information on the families and by case study information on selected cases.

Salient Variables in Research with

Mentally Retarded Children

In the spring of 1976 we began our study of the effects of home environment on the behavior of young mentally retarded children. These children were enrolled in three types of special education programs: for the trainable mentally retarded (TMR), for the educable mentally retarded (EMR), and for the educationally handicapped (EH). We collected data over a four-year period in both the families and school classrooms of these children.

As I said, the focus of our study was on family environment and its effects on the child's behavior. We, therefore, needed good descriptors of family environment. A search of the literature on child development revealed three areas of investigation which we felt would be pertinent to our study.

1. Research on environmental process, or the reinforcement aspects of the environment (Bandura, 1969; Mischel, 1968; Caldwell & Bradley, Note 1).
2. Studies of environmental press, or the psychosocial climate of the home (Murray, 1938; Insel & Moos, 1974; Moos, 1973, 1974, 1975; Stern, Stein, & Bloom, 1956).
3. Investigations of child-rearing practices and attitudes (Baldwin, Kalhorn, & Breese, 1949; Baumrind, 1971; Kagan & Moos, 1962; Schaefer & Bell, 1958; Yarrow, Campbell, & Burton, 1968).

Most studies of environmental process have their origins in the need-press theory of H. A. Murray (1938). He defined press as environmental determinants of behavior. This has been further

developed into reinforcement aspects of the environment which influence the behavior of the child. The behavior studied is usually cognitive functioning and the reinforcement variables tend to fall into three categories: 1) educationally relevant stimuli and learning opportunities available to the child at home, 2) types of reinforcement practice employed by the parents to modify the child's behavior, and 3) parental expectations of and aspirations for the child.

Inspection of the instruments developed to assess reinforcement aspects of the environment (Caldwell & Bradley, Note 1; Dave, 1963; Henderson, Bergan, & Hurt, 1972; Marjoribanks, 1974) inclined us to choose Caldwell & Bradley's Home Observation for Measurement of the Environment (HOME) as most appropriate for our families with the lower-functioning TMR children and Henderson's Environmental Learning Process Scale (HELPS) as best for families with higher functioning EMR and EH children.

I shall restrict myself today to a discussion of our work with families with TMR children. For these children, we employed the revised, Preschool version of this instrument (see Table 1, A); it consists of 54 items which are grouped into eight subscales, most of which are factors. The eight subscales are: Stimulation through toys, games and reading materials; Language stimulation; Physical environment: safe, clean and conducive to development; Pride, affection and warmth; Stimulation of academic behavior; Modeling and encouraging of social maturity; Variety of stimulation; and use of Physical punishment.

Research on environmental press is also an outgrowth of Murray's theory. The emphasis here though, is on press and specifically on

beta press, which is the characteristics of the environment as perceived by the participants in the environment. (In contrast, alpha press is the characteristics of the environment which can be objectively measured by an observer). The most systematic investigation of beta press has been conducted by Rudolph Moos and his colleagues (Moos, 1973, 1974, 1975; Insel & Moos, 1974; Moos, Insel, & Humphrey, 1974; Moos & Moos, 1975, 1976, 1981). They have developed nine scales to measure four major categories of environments: treatment environments, total institutions, educational environments, and community settings. In the category of community settings is "families," and Moos has developed the Family Environment Scale to "assess the social climate of all types of families." This scale focuses on the measurement and description of 1) the interpersonal relationships among family members, 2) the directions of personal growth which are emphasized in the family, and 3) the basic organizational structure of the family. We decided to employ the FES in our study.

FES is composed of 90 items, grouped into ten subscales. These subscales measure the just stated three dimensions. The Relationship dimension contains the subscales of Cohesion, Expressiveness, and Conflict. The Personal Growth dimension consists of Independence, Achievement Orientation, intellectual-Cultural Orientation, Active-Recreational Orientation, and Moral-Religious Emphasis. The Systems Maintenance dimension consists of Organization and Control.

Moos developed his scales using classical scale construction methods, not factor analysis. He maintains that his ten subscales are independent. However, factor analytic studies by other investigators

(Fowler, 1981; Nihira, Mink, & Meyers, 1981) indicate that a lesser number of factors adequately describe FES.

We choose to utilize a six-factor version of FES derived from our own factor analytic study. These factors are: Expressiveness, Achievement Orientation, Moral-Religious Emphasis, Control, Cohesion vs. Conflict, and Intellectual-Cultural/Active-Recreational Orientation (See Table 1, B).

The third area of investigation which we felt would yield salient variables were studies dealing with the relationship between child-rearing practices and attitudes and the adjustment of the child. A perusal of this extensively researched area revealed that parental attitudes and practices tended to fall into three basic dimensions: 1) acceptance vs. rejection or love vs. hostility, 2) restrictiveness vs. permissiveness or control vs. laissez-faire, and 3) emotional involvement vs. detachment.

We were much interested in Baumrind's comprehensive work in this area (1971). Unfortunately, her research instrumentation was quite lengthy and required a considerable amount of observation time. We felt that available instruments in this area could not be easily adapted to our interview and questionnaire battery. We, therefore, chose to develop an instrument to tap parental practices and several other areas which we felt needed exploration.

The Home Quality Rating Scale (HQRS) was designed to assess child-rearing practices and family adjustment to the mentally retarded child (Meyers, Mink, & Nihira, Note 2). The scale consists of 26 Likert type rating scales to be completed by the person who visits the home and observes and interviews the parents. The scale provides the

following five factor scores: Harmony and quality of parenting, Concordance in parenting and marriage, Openness and awareness of the respondent, Quality of the residential environment, and Quality of the residential area. (see Table 1, C).

From these three instruments (HOME, FES, and HQRS), we obtained 19 variables which we felt provided a comprehensive description of the family environment.

A Typological Study

In earlier studies of this sample of families with mentally retarded children, we had employed multiple regression and canonical correlation analysis (Nihira, Meyers, & Mink, 1980; Nihira, Mink, & Meyers, 1981). These studies revealed the importance of family environment in the development of these children, however, we felt that certain combinations of home variables were related to child adjustment and that such patterns could not be ascertained by these analytical methods (Mink, Nihira, & Meyers, 1983).

We were looking for basic family patterns, or different types of family life style. The statistic of choice in such a search is cluster analysis. This technique forms groups by maximizing intra-group similarities or a group of variables while also maximizing intergroup differences (Anderberg, 1973; Everitt, 1980).

There are a number of cluster analytic methods for forming groups. We choose an iterative partitioning method, K-means (Engelman & Hartigan, 1981). In this method the investigator chooses the number of clusters believed to be present in the data. This decision is based on your knowledge of the general data field and on your

familiarity with your data. Once you decide on the number of clusters, the computer (cluster analyses use only become popular with the advent of high speed computers), derives estimates of the cluster centroids. Subjects are then assigned to the cluster that they most resemble, then new centroids are computed for each cluster. Subjects who did not readily fit into a cluster are re-assigned to clusters based on their similarity to the recomputed centroids. The process is repeated until all subjects are assigned to a cluster where there is a goodness of fit. The careful investigator usually requests several cluster solutions with different numbers of clusters and then selects the optimal solution.

Subjects

Our TMR sample consisted of 115 families and their handicapped children. Father-figures were present in 84 percent of the families; over 47 percent of the mothers were employed. The average family socioeconomic level was 48.0 on the Duncan scale, placing them in the middle class range. The average number of children in the homes, under age 18, was 2.5.

Approximately 48 percent of these children had Down syndrome; about 57 percent were male. Ethnic composition was 79 percent white, 3 percent black, 16 percent Hispanic, and the remaining 2 percent other. The average age of the retarded children was 12.7 years and the average IQ of the children was 41.5.

Cluster Analysis

The nineteen measures from HOME, FES, and HQRS provided us with the clustering variables (see Table 1). Cluster analysis of these variables revealed five distinctive types of families (see Table 2).

Cluster 1:

Cohesive, harmonious families (N = 35). These families scored high on Cohesion and Harmony. Moral-Religious emphasis was somewhat elevated. Language stimulation was low.

Cluster 2:

Control-oriented, somewhat unharmonious families (N = 34). Elevated scores in this group are Language stimulation, Modeling and encouraging social maturity and emphasis on Control. Low scores are on Harmony and Quality of the Residential environment.

Cluster 3:

Low-disclosure, unharmonious families (N = 7). This is a profile of extremes. The most distinguishing feature is the exceptionally low score on Openness and awareness of the respondent. High scores are obtained on Stimulation through toys, games, and reading materials, Language stimulation, Academic stimulation, Variety of stimulation, Moral-Religious emphasis, and Concordance in parenting and marriage.

Cluster 4:

Child-oriented, expressive families (N = 27). High scores here are on variables concerned with the child's well-being. Language stimulation, Pride, affection and warmth, and little use of Physical punishment. Also high are Expressiveness, Achievement-orientation, Intellectual-cultural and active-recreational orientation, and Quality of the residential environment. Low scores are on Moral-Religious emphasis, Control, and Concordance in parenting and marriage.

Cluster 5:

Disadvantaged families with low morale (N = 12). These families have low scores on almost all variables. The only positively elevated score is on Achievement orientation.

Criterion Analysis

In using cluster analysis to define different types one is always faced with the possibility of obtaining a typology that is a statistical artifact. It is, therefore, quite important to provide some external validation for the obtained clusters.

Since we had used the measures of family environment for our clustering variables, we turned to our measures of family and child characteristics and behavior. Percentages, means and tests of significance were calculated for parent and family characteristics and behavior at home and at school. A brief description of what we obtained follows.

Cluster 1:

Cohesive harmonious families. Very few (31%) of the mothers in this cluster were employed. There was a total absence of negative child influence on the marriage. Two-thirds of the children were Down syndrome, less than half were male (46%), and two-thirds were white. At home, these children had significantly high scores on social competency. At school, teachers rated these children significantly high on self-esteem and children rated themselves significantly high on physical size and peer acceptance (dimensions of self-concept).

Cluster 2:

Control-oriented, somewhat unharmonious families. Over two-thirds of the mothers in this group worked. All father-figures

assisted with child-care. These families had the highest socio-economic level of all of the groups. They also had a significantly low occurrence of stressful life events. Children were predominantly male (82%) and white (88%). Only 38 percent of the children had Down syndrome. At home, these children had significantly low scores on all competency dimensions of the Adaptive Behavior Scale (Nihira, Foster, Shellhaas, & Leland, 1974) and on social adjustment. At school, Community Self-Sufficiency (a scale of ABS) and self-esteem were significantly low.

Cluster 3:

Low-disclosure, unharmonious families. Father-figures were present in all families and were reported to assist with child-care. Most mothers worked. Families had the highest occurrence of stressful life events and negative child impact. Almost 43 percent of the children had Down syndrome and over 86% were white. There were significantly more girls (71%) than in other clusters. These children also had the highest IQ, 47.4. At home, children were significantly high on measures of competency and adjustment. At school, the children were significantly high on measures of competency, self-esteem and peer acceptance.

Cluster 4:

Child-oriented, expressive families. This group had the lowest percentage of father-figures present; when they were present though, almost all assisted with child-care. Over 96 percent of these children were white, almost 52 percent were male, and over 44 percent had Down syndrome. The children had significantly high home Personal Self-Sufficiency scores. School measures were at the average, except

for below average maladaptation scores. Children rated themselves significantly low on physical size and peer acceptance.

Cluster 5:

Disadvantaged families with low morale. This family type had the lowest number of fathers who assisted with child-care (73%). Only one-third of the mothers were employed. Occurrence of stressful life events was fairly high, parents' reported attitude to the child's impact on the family was poor, and many of these children were rated as having a negative influence on their families. Children were equally divided into white and nonwhite groups and were below the group average on percentage of males (42%). Only one-third of these children had Down syndrome; the IQ score was the lowest of all groups, 36.9. Measures of competency and adjustment at home were significantly low. Teachers rated them significantly low on Community Self-Sufficiency and self-esteem.

Ethnography

We were fortunate in that we had obtained extensive ethnography on a small sample of these families prior to data analysis. We augmented this sample with intensive interviews of several more families. These reports of family dynamics and interactions between family members over extended periods of time confirmed (in an informal sense) the results of our cluster analysis. It would be difficult to assign the ethnographic report of a group 1 family (Cohesive, harmonious) to Group 5 (Disadvantaged family) or vice versa.

Discussion

It appears then that we obtained a five cluster typology of our TMR families which makes good conceptual and empirical sense. Our

first cluster, Cohesive, harmonious families provided a good environment for the developing child; the child's behavior at home and at school, on measures of social competency and self-esteem, was significantly better than other groups. The fourth cluster, Child-oriented, expressive, appeared to provide a reasonably good family environment, however, children in this group, while scoring well in competency at home, did not fare so well at school, most measures were at average and self-concept scores were low. This may be related to father-figure absence in a third of the families. The second cluster was not the best, it was also not the worst. Families were control-oriented and unharmonious and children displayed poor competency at home and at school. In addition, self-esteem at school was low. The poorest environment for child-rearing was the fifth cluster, Disadvantaged families with low morale. These families were impoverished, both economically and emotionally. Children showed poor competency at home and at school. They also had low self-esteem.

The remaining cluster, the Low-disclosure, unharmonious family, is a problematic family from the standpoint of research. Parents are unwilling to disclose information and appear to give socially desirable responses. We conjecture that the parent is unwilling to accept the child's retardation, rather than deliberately deceiving the interviewer. Parental denial, however, does not appear to affect the child, who is exceptionally well adjusted and competent at home and at school.

A Comparison of Two Family Typologies

In an earlier paper (Mink, Meyers, & Nihira, Note 3), we did a cluster analysis of 218 EMR and EH families in our sample. That analysis yielded a seven-cluster solution (see Table 3). Among these seven family types are three that I would like to discuss: Cluster A, the Child-oriented, concordant family, Cluster C, the Low-disclosure, unharmonious family, and Cluster D, the Disadvantaged family with little concern for the child.

While the instrument measuring the reinforcement aspects of the environment is different for the TMR and EMR-EH samples, the instruments measuring environmental press and child-rearing practices are the same. Thus, a comparison of the two typologies is possible.

The Child-oriented, concordant family (EMR-EH) compares favorably with the Cohesive, harmonious family (TMR). Scores are different on Concordance, Residential environment, and Residential area. The latter two variables are related to socioeconomic level, which is 38.0 for EMR-EH families and 48.0 for TMR families (Figure 8).

The profiles for the EMR-EH and TMR Low-disclosure, unharmonious families are not similar on the FES, but are quite similar on the HQRS. Whether or not the FES differences are due to socioeconomic factors remains to be determined.

A comparison of the profiles of the EMR-EH and TMR Disadvantaged families reveals similarity on both the FES and HQRS except for the variable of Intellectual-cultural and active recreational orientation. The depressed score for the TMR families may be due to the child's lower level of functioning (Figure 9).

A Discriminant Analysis Study

As I mentioned earlier, we used 19 family environment variables in our cluster analysis. In an effort to reduce the number of variables necessary for an adequate classification of the families, we applied a stepwise discriminant analysis to our data. The stepwise procedure begins by selecting the single best-discriminating variable according to a certain criterion. "The second discriminating variable is selected as the variable best able to improve the value of the discrimination criterion in combination with the first variable. The third and subsequent variables are selected according to their ability to contribute to further discrimination" (Klecka, 1975 p. 436). This procedure continues until either all variables are selected or the remaining variables can make no contribution to further discrimination.

If we are willing to accept a 14 percent error of placement of our cases into the correct cluster, we can reduce the number of descriptor variables to ten (see Table 1 for asterisked variables). If we want to decrease the error to 10 percent, we need to add three more variables (see Table 1 for double asterisked variables).

A reduction of almost half of our family environment variables in exchange for a 14 percent error of placement would seem to be cost effective. Of course, what error we are willing to accept depends on the use to which we plan to put our results. If for instance, we planned to implement a costly outreach program to our seriously at risk cluster, Disadvantaged families with low morale, then we might want only a 10 percent error factor, or perhaps little or no error factor and so retain the whole battery of instruments.

Another consideration on which variables and instruments to retain, is the cost of obtaining information. FES is a self-administered instrument and as such has a relatively low cost of administration, whereas HOME and HQRS require a home visit and observation by a trained interviewer.

What we've learned here is that some family variables are indeed more salient than others for discriminating between families.

A Canonical Analysis

A side benefit of the stepwise discriminant analysis is that it provides you with canonical correlations between the family environment variables and the (dummy) variables representing the groups. "The first canonical variable is the linear combination of variables entered that best discriminates among the groups, the second canonical variable is the next best linear combination orthogonal to the first one, etc." (Jennrich & Sampson, 1979).

Our first canonical variate accounted for 65 percent of the variance, the second variate accounted for another 22 percent. The third and fourth variates were negligible additions.

The first variate had high positive canonical coefficients for Academic stimulation (.91), Residential area (.76), Intellectual-cultural and active-recreational orientation (.33), and high negative canonical coefficients for Language stimulation (-.41), Physical environment (-.36), Concordance (-.35), and Residential environment (-.31), higher on second variate). It appears then to be a dimension of provision of an enriched environment for child development. The clusters (group means) fall along this dimension in the way that we

had informally grouped them, that is, Cluster 1 was the highest scoring family type, followed by Cluster 4 at a considerable distance (3 points), closely followed by Cluster 2 (½ a point), then at another distance (a little over 2 points) comes Cluster 3, and then Cluster 5 (1 point distance, the lowest scoring family type (Fig. 4).

The second canonical variate is a complex one: high canonical coefficients are on Harmony (.41), Moral-Religious emphasis (.38), and Stimulation through toys, games, and reading materials (.34, higher coefficient on first variate), while high negative coefficients are on Openness (-.78), Residential environment (-.61), Achievement orientation (-.45), and Academic stimulation (-.43, higher on first variate). Its main function appears to be differentiation between Clusters 2 and 4.

Ethnography and Interviews: Follow-up

In our taxonomy of TMR families (Mink, et al. 1983), we discussed a family in each type. I would like to focus on two of these, the Cohesive, harmonious family and the Disadvantaged family with low morale.

Cohesive, harmonious family. Our ethnographer reported that Sara Isaacs, at age ten, was "bound to be a 'success story'." Sara. a Dpwm syndrome child, was blonde, pretty and had a winning way about her. Although she had scored 36 on the Stanford-Binet, her alertness, comprehension and reading level (first grade) belied the low score.

She was also highly competent in adaptive behavior skills. She was able to attend to personal hygiene and dress herself. Her mother allowed her much independence; she would take walks with her dog all

around the neighborhood and visit her neighborhood friends. She was even able to make purchases at the neighborhood store by herself.

Her major problem area was articulation. She could not make herself easily understood. Her parents, most likely because of their shared family context, could usually understand her. But even they, at times, could not interpret what she said. After a period of accommodation, her teachers were generally able to understand her. Our ethnographer, who spent a good amount of time with Sara, reported many instances of communication failure. After some of them, Sara became frustrated and angry.,

Outside of her deficiencies in expressive speech, Sara did well at school and was in the highest achievement group for each activity. She was "among the first children to be 'mainstreamed' from her TMR school into a 'regular' school." Her speech therapist believed that daily therapy would improve her articulation and judged her to have "one of the better chances for being able to do something with her life," at least in a sheltered situation. Her teacher reported her to be free of emotional problems compared to the other children in class and attributed this to the caring environment provided by her parents.

Sara's parents were, indeed, attentive to her. They spent a great amount of time with her, teaching her, and just generally enjoying her company. They were aware of her limitations and understood that she would need a sheltered environment for both living and working.

At age 14, Sara's life was both similar and different. Most of her "skills and activities had changed very little, the prognosis,

[however], would not be as optimistic" as when she was younger (Korbin, Note 4, p. 12).

Earlier Sara's father had rejected a promotion because it meant moving to another city where he judged the special education program to be inferior. However, when Sara was eleven he accepted the promotion and the family moved.

In her new home Sara continues to take walks around the neighborhood with her dog. Unfortunately, she has no neighborhood friends, but she does make small purchases at the neighborhood store. However, since her language is still difficult to understand, she sometimes needs to carry a note written by her mother.

At school, speech therapy has not noticeably improved her articulation. Her reading skills also have not markedly improved. Although she was reading at first grade level at age ten, she has only advanced to second grade level by age 14. She has learned some new skills, mainly of an applied nature - she performs sorting tasks, makes wood platters and plaques, and embroiders pillows.

It is in the area of social skills that Sara's behavior has changed dramatically. "She increasingly displays difficult behavior." She refuses to speak or attend to one of her teachers. "She has started talking and muttering to herself at home, seeming to go off 'into her own little world'." She also does this at school. Sara's mother "believes that this is the result of having no friends with whom to talk (Korbin, Note 4, p. 14)." The ethnographer feels that this behavior fits into her earlier pattern of becoming frustrated when she could not make herself understood.

Sara's lack of friends continued when she returned to her old neighborhood the summer following her move. The mother of Sara's best friend, who was not retarded, felt that Sara's inarticulateness exacerbated her daughter's speech problems and she discouraged the friendship. Sara's other friend, a three year old boy, did not want to play with Sara any more because she was too big and still didn't know how to play many games.

Korbin, who did the ethnography, states that Sara's problem is increasing incongruity between chronological age and competence. As this discrepancy becomes larger, "skills that Sara displayed at nine years of age will be less impressive, if impressive at all, at fourteen or twenty-two." This also "creates problems for Sara who once received [reinforcement] and praise for skills that now are reacted to as non-remarkable."

Disadvantaged family with low morale. Andrew Larson, a Down syndrome child, had poor coordination and very poor receptive and expressive speech at age 14. He was also tall, thin, unattractive, and given to occasional violent outbursts. His IQ was 27.

He had no close friends, although a young neighbor child would sometimes climb the back fence and play with him. His usual play, however, consisted of hours of solitary swinging in the backyard. His mother would not allow him out into the neighborhood fearing he would get lost, as had happened on one occasion.

At school, Andrew had problems. In fact, he sometimes refused to go to school. His mother reported that he would hit children who teased him. Since his communication was so poor, he was taught signing. His parents reported they also were learning to sign.

The Larsons, a couple in their late 50's, appeared to be kind and warm, but somewhat passive. They were much attached to Andy; he was their only son. However, care of him appeared to overwhelm them. They were unable to handle his maladaptive behavior, and therefore rarely took him on outings. They only socialized with their daughters, who all lived away from home, and close relatives. Although mention was made of Andy learning some skills so he could be more independent, no concrete plans were made.

Two years later we contacted Mrs. Larson. She was quite cheerful and reported that Andy was doing quite well at school. He was ready to go to school every morning. In fact, she has enrolled him in a summer program.

"Andy changed schools this year. He is no longer the oldest child in class, but one of the youngest. His new school has different classes and Andy enjoys the change." He likes learning simple tasks like sorting and rolling papers. He particularly enjoys earning "money" and "spending it in the school store." He, and his parents, are proud of his projects in woodcraft class. He is learning simple household tasks. He bowls with the school program every Friday and is signed up for Special Olympics.

Andy still does not read or write or even speak intelligibly. He has learned to print his name, but that's about all. He has few friends at school and is still a solitary boy. He also does not have any neighborhood friends; the young neighbor child has developed his own set of friends and doesn't play with Andy any more. His play activity is still swinging, only now he does it to music - his tape recorder or radio.

In some ways this has been a traumatic year for the Larsons. Mr. Larson had cancer surgery last May, followed by a course of chemotherapy. Andy, who is very close to his father, visited him in the hospital and was very quiet. "Seemed to sense the gravity of the matter."

Still Mrs. Larson insisted that the two years since she was last visited have been very good. Andy went with them to Oregon to visit a sister and was a real pleasure on the trip. He also went to Apple Valley and San Diego with them. Andy and his Dad have resumed their Saturday bowling. And Andy's health has even improved, "he doesn't get colds so often."

Mrs. Larson attributes the change in Andy to the new school. She may be right. The Larsons are as passive as they were two years ago. They never learned signing, they don't follow through on classroom-initiated learning, but if the school offers extra programs they do avail themselves of them.

Conclusions

We initially chose nineteen variables which we considered salient for the description of the family. These variables measured environmental process, environmental press, and child-rearing attitudes and practices of the family.

We used these variables to perform a cluster analysis of TMR families and discovered that we had five different family types in our sample. Of these family types (Cohesive, harmonious; Control-oriented, somewhat unharmonious; Low-disclosure, Unharmonious; Child-oriented, expressive; and Disadvantaged with low morale), three

resembled family types which we had obtained in a cluster analysis of EMR-EH families. While this does not constitute a replication, it indicates that certain common family types may emerge regardless of the degree of handicap of the mentally retarded child.

We also attempted to reduce the number of variables necessary to describe our TMR families and place them in the right cluster. If we are willing to accept a 14 percent error of placement, we can use just ten variables to describe the families. If we want to reduce the placement error to 10 percent, then have to utilize thirteen variables.

A canonical analysis of these nineteen variables revealed that the most important dimension (the first canonical variate) differentiating our five clusters was one we labelled "Provision of an enriched environment for child development." Our five clusters fall along this dimension in the predicted manner - the Cohesive harmonious family had the highest score and the Disadvantaged family with low morale had the lowest score.

What next? Well, we would like to determine whether there are common family types regardless of the child's level of functioning or type of handicap. Among other things, family type indicates different responses to the child's handicap and different styles of coping - both of which are important for the design of treatment and educational programs. If there are common types regardless of level of functioning, and our research seems to indicate that there are, it is also important to determine if similar family types can be found in a group of families with non-handicapped children.

From the follow-up of a Cohesive, harmonious family and a Disadvantaged family, we would say that a follow-up study of our TMR families as the children go through adolescence is important. It appears that environmental measures and children's behavior change over time. Areas which should be focused on are: parents response to increasing discrepancy of age and competency level, impact of the school program on child and family, and parental expectations for the child.

Another point we would like to address is whether self-administering instruments which measure our salient variables can be designed and used in place of the more expensive observation instruments. If this can be done, and we can reproduce our family types, the cost of determing a person's type would be minimal and it would become feasible for these types to be utilized in clinical and educational settings. This is one of the most important questions regarding a typology. What does it do, what benefits accrue to us and to the family if we know what the type is? This kind of study remains to be done.

Another important question which we feel needs answering is, what is the reciprocal relationship of family environment to child characteristics and behavior for these different family types? We have just completed a paper on the reciprocal relationship between home environment and social competency of the total group of TMR children (Nihira, Meyers, & Mink, 1983, in press), and have found significant bidirectional effects. Is the direction of effect different for the various clusters? It would seem so, but further work is needed.

We feel that a typology of families with retarded children is important, but we also know that this is just the first step toward understanding.

Reference Notes

1. Caldwell, B., & Bradley, R. Home Observation for Measurement of the Environment, Manual. The Center for Child Development and Education, University of Arkansas at Little Rock, 1979.

2. Meyers, C. E., Nihira, K., & Mink, I. T. Problems of validating measures of community residential environments. 12th Annual Gatlinburg Conference on Research in MR/DD, Gatlinburg, Tennessee, March, 1980.

3. Mink, I. T., Meyers, C. E., & Nihira, K. Lifestyles in families with slow-learning children: A taxonomy. Working Paper of the Socio-Behavioral Group, No. 18, Los Angeles: Mental Retardation Research Center, UCLA, 1981.

4. Korbin, J. Sarah: The Life Course of a Down's Syndrome Child Manuscript submitted for publication, 1983.

References

Anderberg, M. R. Cluster analysis for applications. New York: Academic Press, 1973.

Baldwin, A., Kalhorn, J., & Breese, F. The appraisal of parent behavior. Psychological Monographs, 1949, 63, (4, Whole No. 299).

Bandura, A. Principals of behavior modification. New York: Holt, Rinehart, & Winston, 1969.

Baumrind, D. Current patterns of parental authority. Developmental Psychology Monographs, 1971, 4, (1, Pc. 2).

Dave, R. H. The identification and measurement of environmental process variables that are related to educational achievement. Unpublished doctoral dissertation, University of Chicago, 1963.

Engelman, L., & Hartigan, J. A. K-means clustering. In W. J. Dixon & M. B. Brown (Eds.), BMDP: Statistical software. Berkeley: University of California Press, 1981.

Everitt, B. S. Cluster analysis (2nd edition). New York: John Wiley & Sons, 1980.

Henderson, R. W., Bergan, J. R., & Hurt, M. Development and validation of the Henderson Environmental Learning Process Scale. Journal of Social Psychology, 1972, 88, 186-196.

Insel, P. M., & Moos, R. G. Psychological environments: Expanding the scope of human ecology. American Psychologist, 1974, 29, 179-188.

Jennrich, R., & Sampson, P. Stepwise Discriminant Analysis. Berkeley: University of California Press, 1981.

Kagan, J., & Moss, H. A. Birth to maturity: A study of psychological development. New York: John Wiley, 1968.

Klecka, W. R. Discriminant analysis. In N. H. Nie, C. H. Hull, J. G. Jenkins, K. Steinbrenner, & D. H. Bent (Eds.), Statistical package for the social sciences (2nd edition). New York: McGraw-Hill, 1975.

Marjoribanks, K. Environment, social class, and mental abilities. In K. Marjoribanks (Ed.), Environment for learning. Slough, England: NFER Publishing Co., 1974.

Mink, I. T., Nihira, K., & Meyers, C. E. Taxonomy of family life styles: I. Homes with TMR children. American Journal of Mental Deficiency, 1983, 87, 484-497.

Mischel, W. Personality and assessment. New York: John Wiley, 1968.

Moos, R. H. Conceptualizations of human environments. American Psychologist, 1973, 28, 652-665.

Moos, R. H., Insel, P. M., & Humphrey, B. Family, work, and group environment scales manual. Palo Alto, CA: Consulting Psychologists Press, 1974.

Moos, R. H. The social climate scales: An overview. Palo Alto, CA: Consulting Psychologists Press, 1974.

Moos, R. H. Evaluating correctional and community settings. New York: Wiley, 1975.

Moos, R. H., & Moos, B. S. Families. In R. H. Moos (Ed.). Evaluating correctional and community settings. New York: Wiley, 1975.

Moos, R. H., & Moos, B. S. A typology of family social environments. Family Process, 1976, 15, 357-371.

Moos, R. H., & Moos, B. S. Family environment scale manual. Palo Alto, CA: Consulting Psychologists Press, 1981.

Murray, H. A. Explorations in personality. New York: Oxford University press, 1983.

Nihira, K., Foster, R., Shellhaas, M., & Leland, H. AAMD Adaptive Behavior Scale. Washington, DC, American Association on Mental Deficiency, 1974.

Nihira, K., Meyers, C. E., & Mink, I. T. Home environment, family adjustment, and the development of mentally retarded children. Applied Research in Mental Retardation, 1980, 1, 5-24.

Nihira, K., Mink, I. T., & Meyers, C. E. Relationship between home environment and school adjustment of the TMR children. American Journal of Mental Deficiency, 1981, 86, 8-15.

Nihira, K., Meyers, C. E., & Mink, I. T. Reciprocal relationship between home environment and development of TMR adolescents. American Journal of Mental Deficiency, in press.

Schaefer, E. S., & Bell, R. O. Development of a parental attitude research instrument. Child Development, 1958, 29, 339-361.

Stern, G. G., Stein, M. I., & Bloom, B. S. Methods in personality assessment. Glencoe, Illinois: Free Press, 1956.

Yarrow, M., Campbell, J., & Burton, R. Child-rearing. San Francisco: Jossey-Bass, 1968.

Salient Variables in Research with Families of Mentally Retarded Children[1]

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Table 1

PSYCHOSOCIAL MEASURES OF FAMILY ENVIRONMENT

A. Home Observation for Measurement of the Environment (Bradley & Caldwell, 1979)

**1. Stimulation through toys, games, and reading material (TOYSTIM)
*2. Language Stimulation (LNGSTIM)
*3. Physical environment: safe, clean, and conducive to development (PHYSENV)
4. Pride, affection, and warmth (PRIDE)
*5. Stimulation of academic behavior (ACASTIM)
6. Modeling and encouraging of social maturity (SOCMAT)
7. Variety of stimulation (VARSTIM)
8. Physical punishment (PHYSPUN)

B. Family Environment Scale (Moos & Moos, 1982)

*1. Expressiveness (EXPRESS)
*2. Achievement orientation (ACHIEVE)
*3. Moral-religious emphasis (MORREL)
4. Control (CONTROL)
5. Cohesion, independence, and organization vs. conflict (COHCNF)
**6. Intellectual-cultural and active-recreational orientation (INTREC)

C. Home Quality Rating Scale (Meyers, Mink & Nihira, 1977)

*1. Harmony of the home and quality of parenting (HARMONY)
**2. Concordance in parenting and marriage (CONCORD)
*3. Openness and awareness of the respondent (OPEN)
*4. Quality of the residential environment (RESENV)
*5. Quality of the residential area (RESAREA)

*Ten measures selected by stepwise discriminant analysis; will predict cluster membership with error of 15 percent.

**Three additional measures, when added to discriminant functions, reduce error of placement to 10 percent.

[1]Paper presented at the Gatlinburg Conference on Research in Mental Retardation/ Development of Disabilities, March, 1983.

Table 2

Typology of TMR Families

Cluster 1: Cohesive, harmonious family (N = 35)
Cluster 2: Control-oriented, somewhat unharmonious family (N = 34)
Cluster 3: Low-disclosure, unharmonious family (N = 7)
Cluster 4: Child-oriented, expressive family (N = 27)
Cluster 5: Disadvantaged family with low morale (N = 12)

Table 3

Typology of EMR-EM Families

Cluster A: Child-oriented, concordant family (N = 23)
Cluster B: Learning-oriented, somewhat discordant family (N = 58)
Cluster C: Low disclosure, unharmonious family (N = 19)
Cluster D: Disadvantaged family with little concern for the child (N = 18)
Cluster E: Achievement-oriented, non-learning supportive family (N = 39)
Cluster F: Expression-oriented family with few socio-cultural interests (N = 27)
Cluster G: Outer-directed family with little achievement orientation (N = 34)

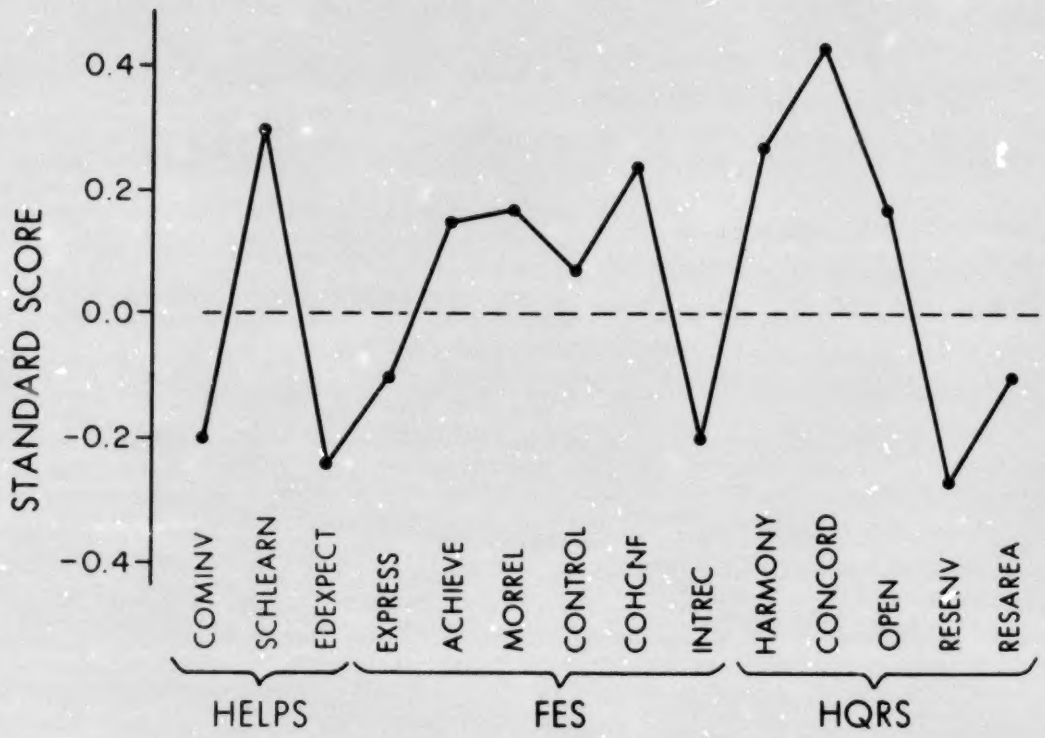

Figure 1. Cluster A: child-oriented, cohesive family

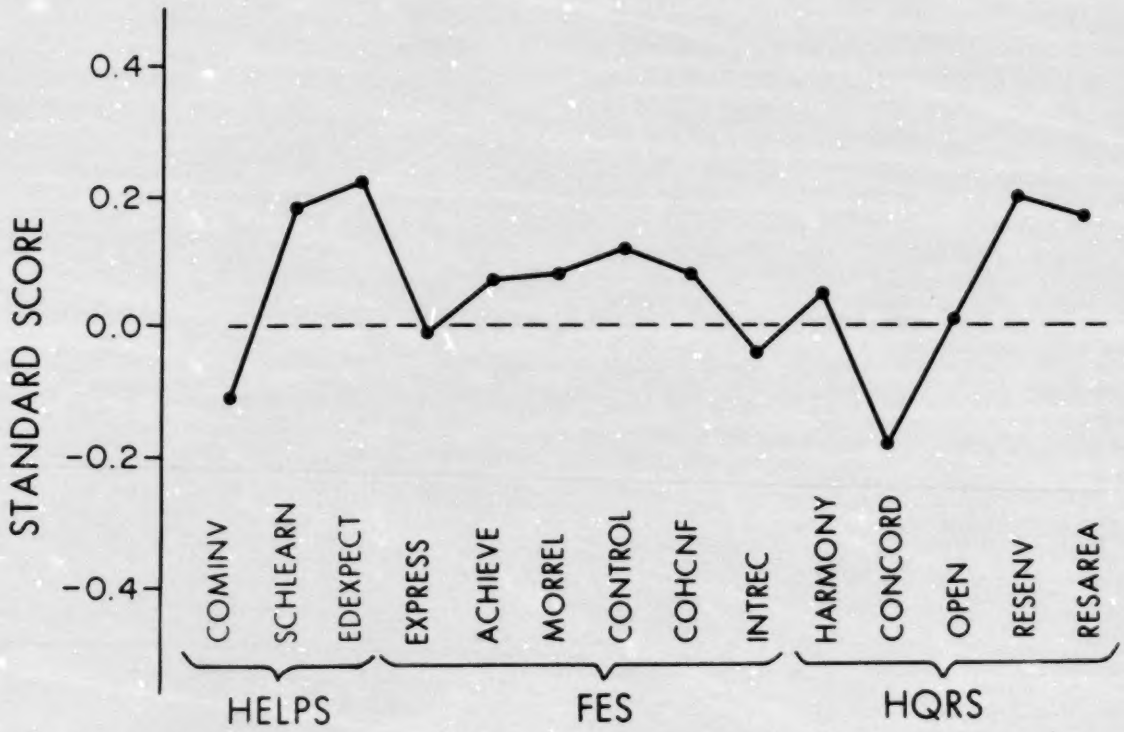

Figure 2. Cluster B: learning-oriented, high residential quality family

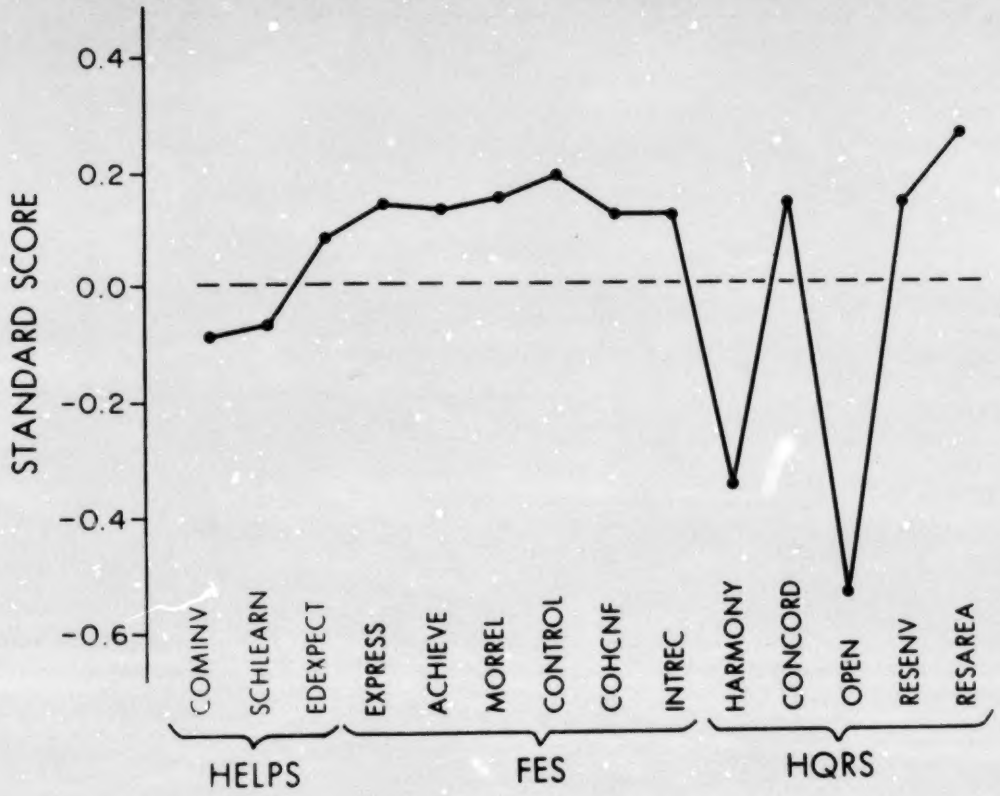

Figure 3. Cluster C: low disclosure, unharmonious family

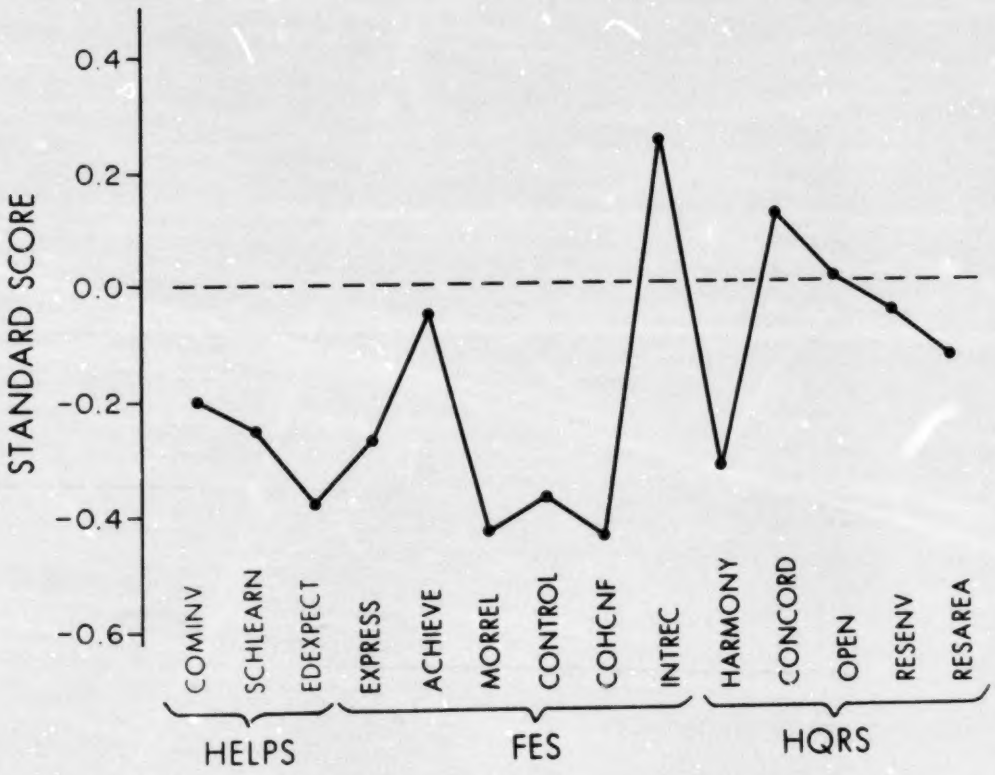

Figure 4. Cluster D: disadvantaged, non-cohesive family

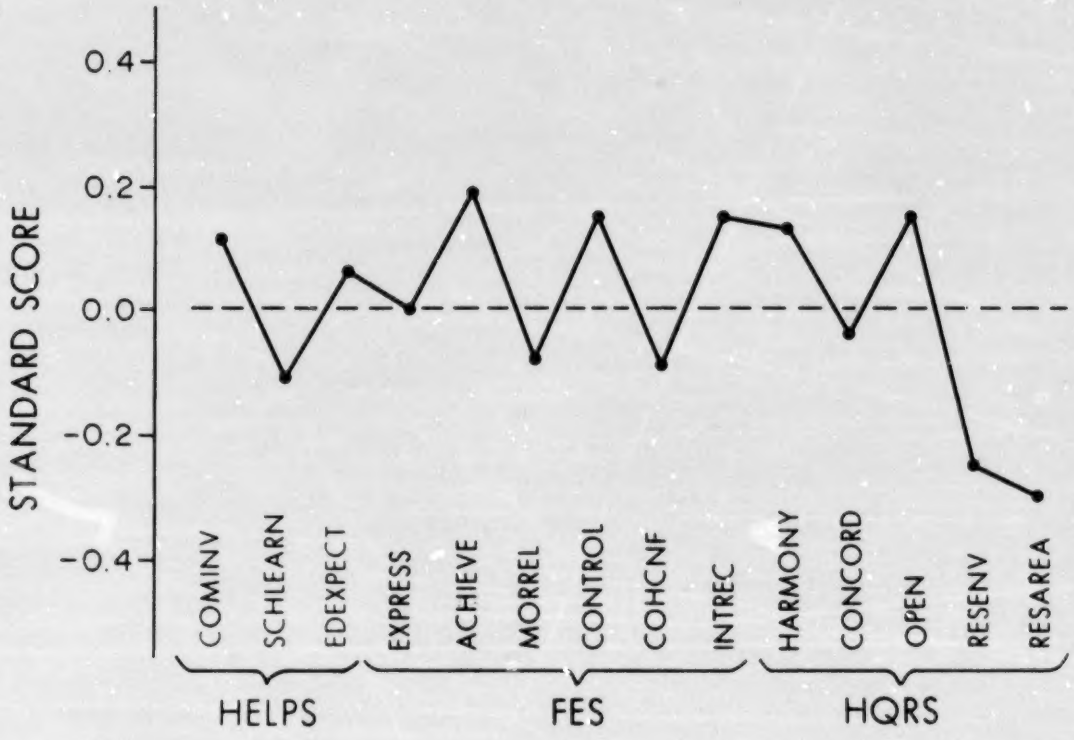

Figure 5. Cluster E: achievement-oriented, low residential quality family

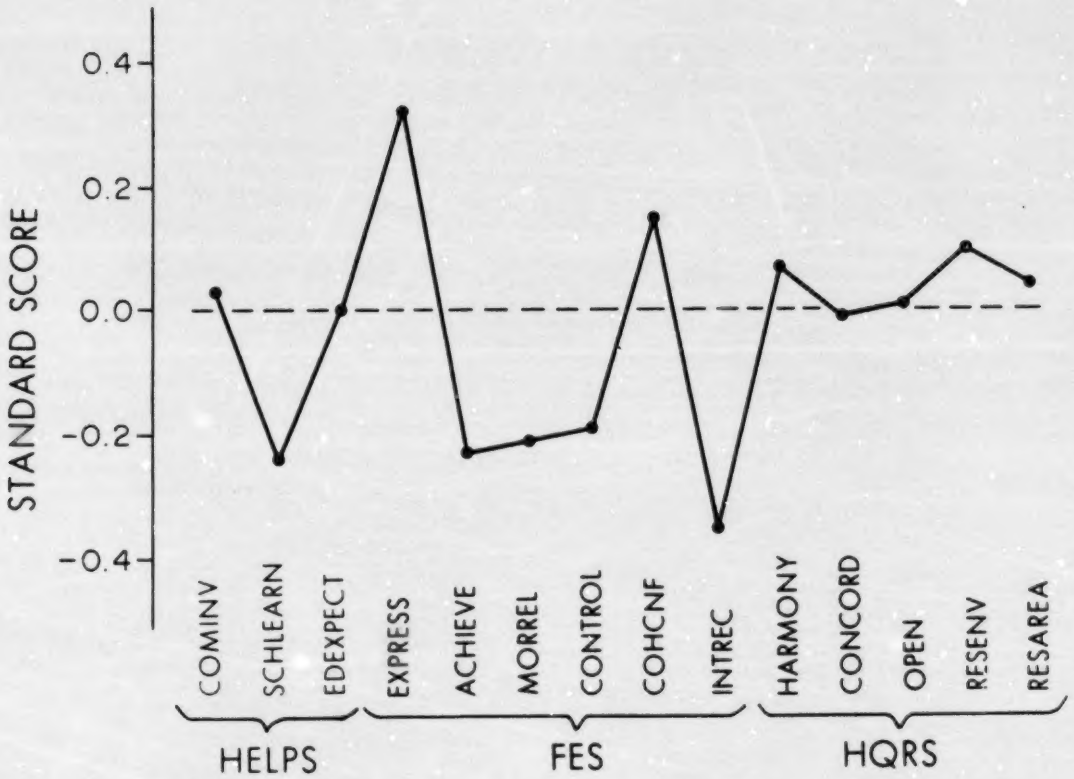

Figure 6. Cluster F: expression-oriented family with few socio-cultural interests

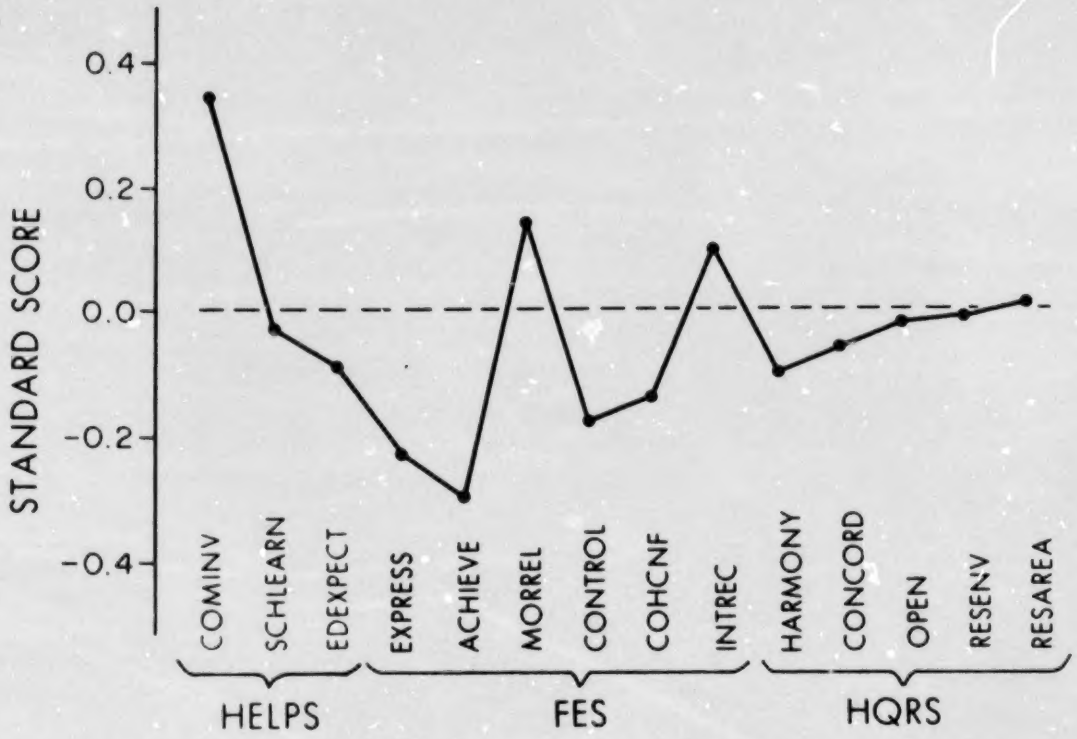

Figure 7. Cluster G: outer-directed family with little achievement-orientation

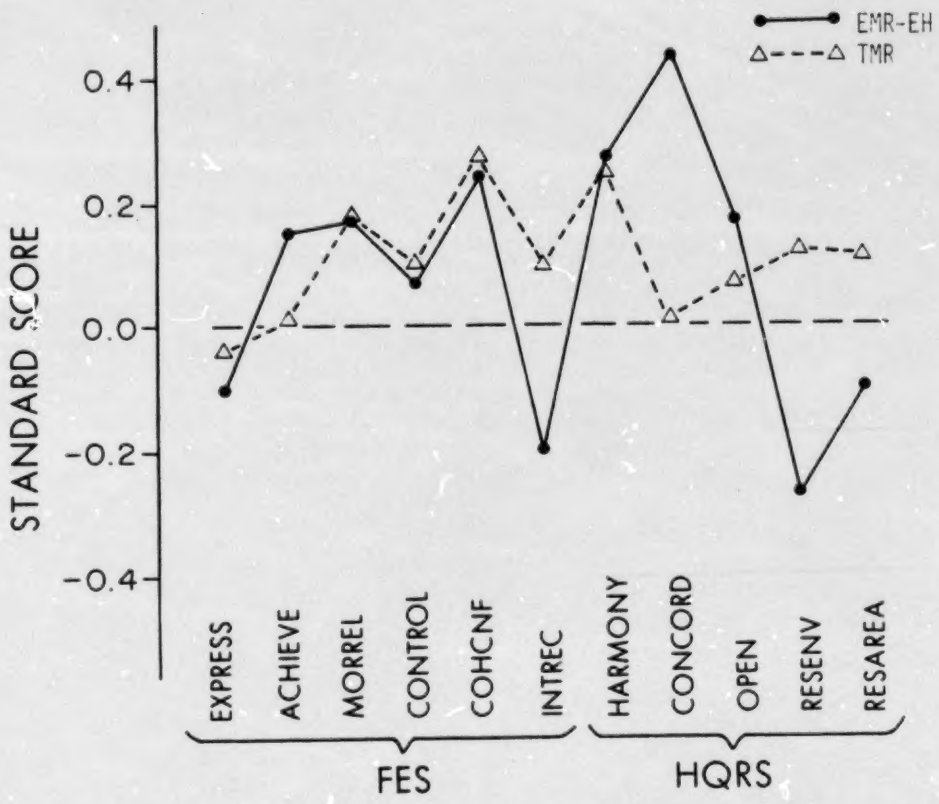

Figure 8. Child-oriented, cohesive family (EMR-EH) vs cohesive, harmonious family (TMR).

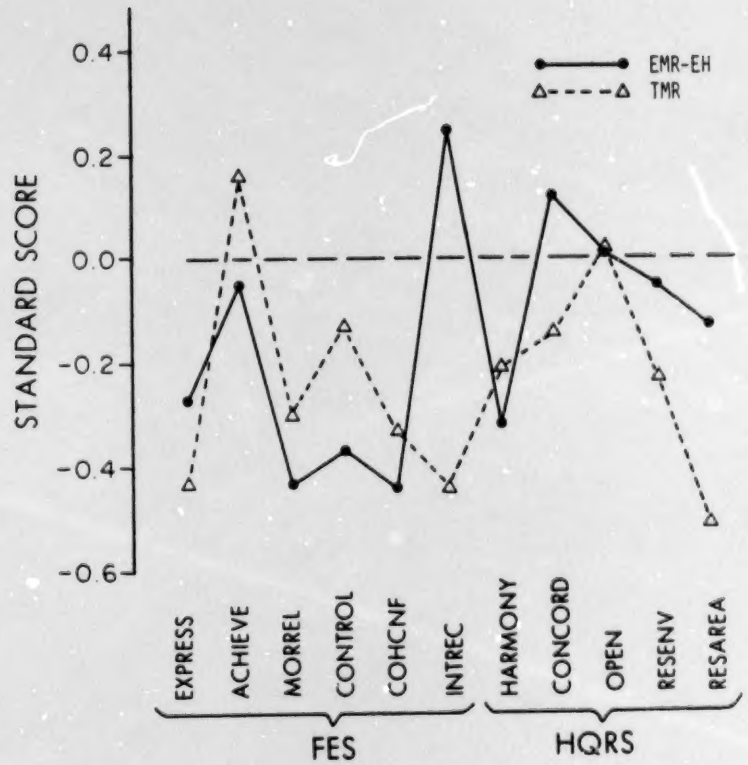

Figure 9. Disadvantaged non-cohesive family (EMR-EH) vs disadvantaged family with low morale (TMR).